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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,838	03/23/2004	Simon P. Bush	0040-8	4237

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ERNEST D. BUFF
ERNEST D. BUFF AND ASSOCIATES, LLC.
231 SOMERVILLE ROAD
BEDMINSTER, NJ 07921

EXAMINER	
KIANNI, KAVEH C	

ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 09/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/806,838	BUSH ET AL.	
	Examiner	Art Unit	
	Kianni C. Kaveh	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☒ Claim(s) *2-6,8-11,13,14 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 22 is objected to because of the following informalities: The claim depends to itself. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 16 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 2-15 and 17-21 depend on claim 1 and therefore they are also rejected.

Claims 1 and 16 are rejected as failing to define the invention in the manner required by 35 U.S.C. 112, second paragraph. Claim 1 and 16 are narrative in form and replete with indefinite and functional or operational language having the limitations 'non-coincidental' in lines 11-12 of claim 1, and 'gearlessly' in 1st line of claim 16. The structure which goes to make up the device must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a *complete operative device*.

claim 22 is ambiguous, since 'common fiber direction' is undefined as whether common direction means the same/common axis of the optical fibers or x, y or z direction. Correction is required.

Allowable Subject Matter

Claims 2-6, 8-11 and 13-14 are objected to as being dependent upon a rejected base claim, but would be allowable if their base claim, claim 1, no longer rejected under USC 112 Second paragraph and rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 2-6, 8-12 and 13-14 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious their respective limitations in combination with the rest of the limitations of the base claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of

each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 7, 12 and 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oki et al. (US 20020159724).

Regarding claim 1, Hishikawa teaches a low profile splicing stage for fusion joining a first optical fiber and a second optical fiber (shown in at least fig. 1), said stage comprising:

a) an electric arc fusion system (shown in fig. 1, items electrodes 25 and associated electrical elements crating electric arc for fusion/fusion/splicing);

b) a clamping and fiber position adjustment system (shown in fig. 1b, see parag. 0027) comprising holding means 27 for holding said fibers 20 in a fiber plane and motion means 26 for moving said fibers in three orthogonal dimensions into coaxial , abutting alignment along a common fiber axis in said fiber plane (see parag. 0027); and

c) an imaging optical system 23 having a fiber imaging illuminator 24 and a fiber image detector (see parag.. 0012),

said imaging optical system being adapted to acquire optical images of said fibers in a first imaging direction 23x and a second imaging direction 23y , said imaging directions being non- coincident (shown in fig. 1A, items 23x,y being non-coincidental), and said image detector providing an electrical signal adapted to be received by imaging electronics and processed to produce a display (shown in fig. 1A and 2, item 22/S9, also parag. 0026).

However, Oki does not explicitly state that the above fusion is welding. It is obvious/well-known to those of ordinary skill in the art when the invention was made that fusion splicing of fibers together is/known as welding the fibers together through electric discharge/arc that heat/melt the fibers to be fused/welded since such welding/fusing system would provide efficient fusion system with minimize power loss (see parag. 0062).

Regarding claims 7, 12 and 15-22 Oki further teaches a wherein said electric arc fusion system comprises a first electrode and a second electrode disposed oppositely and coaxially along a direction perpendicular to said common fiber axis and adapted to be operably connected to fusion control electronics that activate said electric arc fusion system and supply high voltage thereto, whereby said fibers are fused (shown in fig. 1A 2, 7, and 8, items electrodes 25 and their associated control system to deliver power/voltage for fusion); wherein said holding means comprises first and second clamp assemblies (shown in fig. 1, items 27); wherein said motion means comprises at least one electric motor adapted to drive at least one of said fibers (see fig. 1A, item 29 and see at least parag. 0029); a first electric motor 29 adapted to drive said first fiber axially and a second electric motor 29 adapted to drive said second fiber axially (see sig. 1, items 29); wherein said motion means 26 comprises at least one piezoelectric actuator (see fig. 1A, items 28 piezoelectrically—by means of electrically induced mechanical movement--through motor 29 actuates the movement of motion means, also see below prior art); wherein said motion means 26

comprises a first transverse piezoelectric actuator 28 adapted to drive one of said fibers in a first transverse direction substantially perpendicular to said common fiber axis; and a second transverse piezoelectric actuator 28 adapted to drive one of said fibers in a second transverse direction substantially perpendicular to said first transverse direction and said common fiber axis (see items 28 and parag. 0028) wherein said first transverse piezoelectric actuator is adapted to drive said first fiber and said second transverse piezoelectric actuator is adapted to drive said second fiber (see items 28 and parag. 0028); wherein said first and said second transverse piezoelectric actuators are adapted to drive one of said fibers (see items 28 and 20a and parag. 0028) wherein said motion means comprises an axial piezoelectric actuator adapted to drive one of said fibers in said common fiber direction (see items 28 and parag. 0028).

Claims 1, 7, 12, 15-17-18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zamzow (US 6046789).

Regarding claims 1, 7, 12, 15-17-18 and 22, Zamzow teaches a low profile splicing stage for fusion joining a first optical fiber and a second optical fiber (shown in at least fig. 2), said stage comprising:

a) an electric arc welding system EL1,2 ;

b) a clamping and fiber position adjustment system comprising holding means SGX for holding said fibers in a fiber plane and motion means CPU for moving said fibers in three orthogonal dimensions into coaxial, abutting alignment along a common

fiber axis in said fiber plane (see fig. 2, items motion of fibers in x,y and z directions by means of CPU controller); and

c) an imaging optical system having a fiber imaging illuminator and a fiber image detector, said imaging optical system being adapted to acquire optical images of said fibers in a first imaging direction and a second imaging direction, said imaging directions being non-coincident, and said image detector providing an electrical signal adapted to be received by imaging electronics and processed to produce a display (shown in fig. 2, item display DP1 imaged by VB11, detected for display and see parag. 12 and 17 of detailed specification); wherein said electric arc welding system comprises a first electrode and a second electrode disposed oppositely and coaxially along a direction perpendicular to said common fiber axis and adapted to be operably connected to fusion control electronics that activate said electric arc welding system and supply high voltage thereto, whereby said fibers are welded (see fig. 2, items La,b); wherein said holding means comprises first and second clamp assemblies Sgxy; wherein said motion means comprises at least one electric motor adapted to drive at least one of said fibers (see fig. 2, item CPU drives actuator PO to move clamps); wherein said electric motor gearlessly drives said fiber (see fig. 2, item CPU drives actuator PO to move clamps gearlessly); wherein said motion means comprises at least one piezoelectric actuator PO; wherein said motion means comprises an axial piezoelectric actuator—electrically actuated mechanical mover/controller--(PO) adapted to drive one of said fibers in said common fiber direction (see fig, 2 PO and xyz directions).

However, Zamzow does not explicitly state that the above stage, in preamble, is a low profile stage. Although no weight for the preamble is not given which is not supported by the body of the claim, nonetheless, it would have been obvious/well-known to those of ordinary skill in the art when the invention was made that the stage for fusion splicing of fibers having low a height is/known as a low profile stage, similar to the invention defined by the applicant, since such welding/fusing system would provide efficient fusion system with minimize power loss.

Citation of Relevant Prior Art

Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does. These references are:

Higgins, III teaches Fusion machine with piezoelectric actuator

Hishikawa et al. 6206583

Ruegenberg et al. 5904413

Tokumaru et al. 5611015

Kobayashi et al. 5561728

Itoh et al. 5013345

These references are cited herein to show the relevance of the apparatus/methods taught within these references as prior art.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Cyrus Kianni whose telephone number is (571) 272-2417.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (571) 272-2415.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9306 (for formal communications intended for entry)

or:

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.

K. Cyrus Kianni
Primary Patent Examiner
Group Art Unit 2883

KAVEH KIANNI
PRIMARY EXAMINER